

Verification

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Kangnam-Ku, Seoul, Republic of Korea do hereby certify :

THAT I am a Technical Translator of documents including Patent Specifications.

THAT I have good knowledge of both the Korean and English Languages;

AND THAT, to the best of my knowledge and belief, the attached document is a true and correct translation of the Specification No.41190/1999 Dated 09/22/1999 filed by LG ELECTRONICS INC. with their application for Patent in Republic of Korea on the September 22, 1999 for USER PREFERENCE INFORMATION STRUCTURE HAVING MULTIPLE HIERARCHICAL STRUCTURE AND METHOD FOR PROVIDING MULTIMEDIA INFORMATION USING THE SAME and the certificate issued by the Commissioner of the Korean Intellectual Property Office.



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[Translation]

PATENT APPLICATION

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HAVING MULTIPLE HIERARCHICAL STRUCTURE AND METHOD FOR  
PROVIDING MULTIMEDIA INFORMATION USING THE SAME

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[Translation]

## ABSTRACT OF THE DISCLOSURE

[Abstract]

A method for using a preference/non-preference having several hierarchical structure user preference information structure having a multiple hierarchical structure and an information structure of the preference/non-preference which are capable of quickly and easily recommending and providing information desired by a user in a multimedia service system environment consisting of an information provider and an information user.

In providing user's desired information, various independent individual user preference information structures are defined and each user preference item and user preference/non-preference included in the individual user preference information structure defines a relationship in a hierarchical structure, whereby user preference/non-preference are defined from specific items to general items, and an adoption condition of each individual user preference information structure is defined, so that detailed information can be recommended, provided or limited according to a user preference that may be different depending on situations and information fitting situations can be recommended, provided or limited.

[Representative drawing]

Figure 1

[Index words]

Multimedia information service system, user preference information structure

[SPECIFICATION]

[Title of the Invention]

USER PREFERENCE INFORMATION STRUCTURE HAVING MULTIPLE  
HIERARCHICAL STRUCTURE AND METHOD FOR PROVIDING MULTIMEDIA  
INFORMATION USING THE SAME

[Brief description of the Drawings]

Figure 1 illustrates a multiple hierarchical preference information structure;

Figure 2 illustrates preference information structure using identifiers of upper  
items;

Figure 3 illustrates a preference information structure using a coding scheme;

Figure 4 illustrates a preference information structure using an item dictionary;

Figure 5 illustrates a preference information structure with a reduced storage  
space;

Figure 6 illustrates an existing preference structure;

Figure 7 illustrates a hierarchical structure of preference items;

Figures 8a and 8b illustrate multiple structure of preference items;

Figure 9 illustrates an example of an item dictionary;

Figure 10 illustrates a change of a classification system; and

Figures 11a and 11b illustrate an existing item dictionary and a changed item  
dictionary.

[Detailed description of the invention]

[Object of the invention]

[Field of the invention and background art]

The present invention relates to a method for using a preference/non-preference having several hierarchical structure user preference information structure having a multiple hierarchical structure and an information structure of the preference/non-preference which are capable of quickly and easily recommending and providing information desired by a user in a multimedia service system environment consisting of an information provider and an information user.

In a multimedia service system environment consisting of an information provider and an information user, the information user can hardly digest explosively increasing amount of information. The same phenomenon also occurs in the Internet environment that offers huge amount of information as well as in a television broadcast environment that offers entertainment and life information.

Besides, as communication techniques are progressively developed, new providers such as a cable TV appear to provide diverse information.

However, notably, as information providers increase in number more and more, information users find it difficult to quickly and accurately search desired information provided by the information providers.

Accordingly, in order to provide the information users quickly and easily with desired information by the information providers, researches have been conducted and methods have been sought and developed that programs or information preferred by information users (briefly referred to as 'users', hereinafter) are recommended or automatically selected on the basis of a user preference value for information desired by users.

In the methods for providing information in accordance with conventional arts, user preference information by items of information desired by users is constructed on

the basis of a use record (that is, a user profile) that has been used by a user by direct selection, so as to be provided to users.

However, the information providing methods of the conventional arts are not able to adequately cope with situations that user preference values are differently set for the same information according to user's wish and that relationships between items of information are complicate and a user preference value for a single item has a different meaning according to an environment and a relationship with a different item or may be changed to a different user preference value.

For example, a user 'A', who likes a movie in which an actor 'B' played a role (a person>an actor>'B'), may not like a movie directed by the actor 'B' (a person>a director>'B'). Besides, though a user preference value of an upper item is low, a user preference value of a lower item is high, or otherwise, a user preference value of the upper item may be high while a user preference value of the lower item is low. For these situations, the information providing methods of the conventional arts fail to provide proper information adaptively.

As a different example, the user 'A' may want a movie with lots of violence scenes as he or she prefers a movie of violence, but, he may not want violence scenes with a news program or educational information that he or she watches on TV with children, sitting in front of a television set. In this case, the information providing methods of the conventional arts fails to provide proper information according to situations in which in case that an upper item is set as a movie for a violence scene, its user preference value becomes high, while in case that an upper item is set as a news program or an educational stuff, the user preference value becomes low.

Meanwhile, a user preference value on information can be different depending on situations that the user is put, with which the information providing methods of the

conventional arts can hardly cope.

For example, the user may prefer a melodrama or a family movie in a rainy day, or he or she may prefer an action movie in a sunny day. That is, for the same movie item, user preference is different according to situations in which the user is put. The information providing methods of the conventional arts do not properly cope with it.

In addition, the user preference may be different depending on a receiving device used by the user, with which the information providing methods of the conventional arts can hardly cope.

For example, in case that the user watches a movie on a TV with his or her family in a living room, the user may prefer a family-rated movie, while in case that the user watches a movie on a TV in his or her own room, he or she may prefer a movie that is not allowed for minors.

Having such complicate relations, a preference structure with a multiple hierarchical structure is required in order to express a preference changing according to a situation.

[Technical gist of the present invention]

Therefore, an object of the present invention is to provide a data structure for constructing user preference using preference information having a multiple hierarchical structure and a method for using it capable of providing information desired by a user in an environment including an information provider and an information user.

[Construction of the present invention]

To achieve the above object, there is provided a method for providing information by users and by preferences, in which various independent individual user preference

information structures are defined and each user preference item and user preference/non-preference included in the individual user preference information structure defines a relationship in a hierarchical structure, whereby user preference/non-preference are defined from specific items to general items, and an adoption condition of each individual user preference information structure is defined, so that detailed information can be recommended, provided or limited according to a user preference that may be different depending on situations and information fitting situations can be recommended, provided or limited.

To achieve the above object, there is also provided a preference item structure reflecting preference/non-preference of each user having several (multiple) preferences (individual preference information structure).

In the present invention, the individual preference information structure consists of a preference/non-preference item, information on preference/non-preference information with respect to the preference item, and a description with respect to 0 or one preference item, and includes a sub-tree at its lower position.

In the present invention, every item that can be used as multimedia information search conditions can be described in the preference item.

In the present invention, in constructing the preference structure, each preference item has a hierarchical relation.

In the present invention, items having the hierarchical relation have a hierarchical tree structure (individual preference information structure).

In the present invention, the preference information structure allows a user to have several individual preference information structures.

In the present invention, a suitable individual preference information structure is selected from the several individual preference information structures according to a



method such as user selection or automatic client system identification or the like, and used.

In the present invention, a method for providing information according to each user is provided to provide, recommend or limit information using the preference according to each user (preference item structure) having the multiple hierarchical structure.

In the present invention, the method for providing information according to each user features that non-used/newly acquired information is notified according to the individual signal information structure selected from the user preference/non-preference (namely, preference/non-preference by users) having the preference item structure, information expected for user preference is recommended or information expected for user's non-preference is limited.

The present invention provides a method for operating preference (preference item structure of each user having the multiple hierarchical structure.

In the method for operating the preference of each user having the multiple hierarchical structure in the present invention, in a state that the preference item structure is constructed, when hierarchical structure among items is changed, preference information structure can be automatically changed as necessary by using the user's preference information structure and usage record data.

In addition, in the method for operating the user preference having the multiple hierarchical structure, the change in the hierarchical structure among items includes registration of a new item, deletion of an existing item or a change of a tree to which a sub-tree belongs.

In the present invention, when a corresponding classification of information changes, a corresponding preference item of the individual preference information

structure of each user and preference/non-preference of upper items of the hierarchical structure can be changed by using the use record.

In the present invention, in constructing preference/non-preference of each user having the preference item structure, in order to construct preference/non-preference of each item, the user can input/correct preference/non-preference of each item by using a user interface.

The present invention will now be described in detail with reference to the accompanying drawings.

First, a concept of construction of information user preference having a multiple hierarchical structure, a data structure, an operation method of the multiple hierarchical structure and a method for using the constructed preference will be described as follows.

In an environment where there are an information provider and an information user, the information provider needs user preference information in order to provide specified information according to each user.

The user preference information refers to information on preference of a user with a certain form with respect to information that can be provided by the information provider, based on which the information provider can determine whether or not to provide certain information to a specific user with a certain priority level.

The existing methods constructs a list of items having a one-dimensional plane structure for each user preference information and corresponding preference of each item.

However, actually, each item has a hierarchical structure and a meaning or preference differs according to an upper item, and the existing methods cannot express such preference.

For example, a user 'A', who likes a movie in which an actor 'B' played a role (a person>an actor>'B'), may not like a movie directed by the actor 'B' (a person>a

director>'B'). Besides, though a user preference value of an upper item is low, a user preference value of a lower item is high, or otherwise, a user preference value of the upper item may be high while a user preference value of the lower item is low. For these situations, the information providing methods of the conventional arts fail to provide proper information adaptively.

As a different example, the user 'A' may want a movie with lots of violence scenes as he or she prefers a movie of violence, but, he may not want violence scenes with a news program or educational information that he or she watches on TV with children, sitting in front of a television set. In this case, the information providing methods of the conventional arts fails to provide proper information according to situations in which in case that an upper item is set as a movie for a violence scene, its user preference value becomes high, while in case that an upper item is set as a news program or an educational stuff, the user preference value becomes low.

Meanwhile, a user preference value on information can be different depending on situations that the user is put, with which the information providing methods of the conventional arts can hardly cope.

For example, the user may prefer a melodrama or a family movie in a rainy day, or he or she may prefer an action movie in a sunny day. That is, for the same movie item, user preference is different according to situations in which the user is put. The information providing methods of the conventional arts do not properly cope with it.

In addition, the user preference may be different depending on a receiving device used by the user, with which the information providing methods of the conventional arts can hardly cope.

For example, in case that the user watches a movie on a TV with his or her family in a living room, the user may prefer a family-rated movie, while in case that the user

watches a movie on a TV in his or her own room, he or she may prefer a movie that is not allowed for minors.

In the present invention, a user can have several preferences to express preference changing according to a situation, and also express preference of a preference item which differs according to hierarchical structure by allowing a hierarchical structure among preference items.

Figure 1 is a conceptual view of a data structure for constructing user preference information having multiple hierarchical structure.

Each user has one personal matter information, a plurality of use records, one preference information structure, a plurality of use authorization information or the like.

The personal matter includes a user ID, a name, a sex, an age and date and year of birth of a user.

The use record includes information on when (year, month, data, time), where (a client system ID), how (information as to when an action such as play, review, pause, fast forward or stop happens) and what information (an information ID) has been used.

The user authorization information indicates allowable information for the user to use. For example, it includes information on channels that are requested and not requested to view a TV broadcasting or information on a basic channel and a charged channel.

The user preference information may include a plurality of individual user preference information.

Each individual user preference information may include a single user preference item, a user preference/non-preference, and a single description, if any.

In case where the plurality of individual user preference information need to be identified, the description describes adaptive relationship between the user preference

information and the individual user preference information arranged in the low portion of the user preference information. When multiple user preference information is constructed by using the description, the user selects desired individual user preference information to use.

In this regard, since each individual user preference information may include a plurality of individual user preference information, a hierarchical tree structure is formed between the user preference items and each user preference item has a user preference/non-preference value. The user preference/non-preference value may be expressed by values representing steps between 1 (the maximum non-preference) and 10 (the maximum user preference) or may be expressed by a binary value. The user preference/non-preference value may be expressed by a value that accumulates the number of use of information corresponding to each item.

Figures 2 to 5 show examples of expressing the individual preference information structure as shown in Figure 1 in a table.

The tree structure as shown in Figure 1 can be expressed in various ways.

Figure 2 shows a tree structure having identifiers of upper preference items as upper item identifiers.

In case of expressing the tree structure as shown in Figure 2, the tree structure can express in a certain format regardless of the number of stages of the hierarchical structure.

Figure 3 is a table showing a tree structure by using a coding scheme.

The method as shown in Figure 3 is effective when the highest stage number is predetermined in a multi-stage hierarchical structure. Especially, in this method, time to access the upper items and the lower items is taken short and a relatively less storing space is required.

The item identifier can be divided into fields as many as the number of stages (i.e., 4 stages) having a certain bit and/or byte (i.e., 2 byte), and each field can be expressed as item identifiers (1<sup>st</sup> 2bytes, 2<sup>nd</sup> bytes, 3<sup>rd</sup> bytes, 4<sup>th</sup> bytes) of each stage.

That is, in case that 8 byte of item identifier is divided into 4 fields of 2 byte, the first field has the uppermost item identifier and the next field has an item identifier of the next stage. In the 4-stage hierarchical structure, the last-staged item has an item identifier of which none of 4 fields are '0'.

In this respect, in case that the 4<sup>th</sup> field is changed to '0', the very upper field becomes an item identifier, while in case that the 3<sup>rd</sup> and 4<sup>th</sup> field are all changed to '0', the 2<sup>nd</sup> field becomes an item identifier.

For example, in the user preference item, the item identifier of the 'new age' is 1-17-181-205, and the 'new age' item signifies that it belongs to the 'pop music' item having 1-17-181-0 as an item identifier.

As another example taken, in the user preference item, the 'pop music', having the item identifier of 1-17-181-0, belongs to the 'music' having an item identifier of 1-17-0-0, and the 'music', having the item identifier of 1-17-0-0, belongs to the 'entertainment' having an item identifier of 1-0-0-0.

Meanwhile, the 'entertainment' having the identifier of 1-0-0-0 includes items of every item identifier having the form of 1-\*-0-0. Especially, the 'entertainment' includes every item having a form of 1-\*-0-0 as items at the very lower stage.

In this method, the identifier of each item is dependent on the identifier of the upper item, and items are differentiated by changing an identifier belonging to a field.

Accordingly, each field may start from '0' and a single field can be expressed by 2 bytes, so that a single item can include 65,535 lower items.

Figure 4 is a table showing a hierarchical structure by using an item dictionary in

accordance with the present invention.

With reference to Figure 4, items are defined by item identifiers to thereby generate an item dictionary, and a structural relationship between the upper items and the lower items is searched by using the item identifiers defined in the item dictionary.

Although the method in which the hierarchical structure is expressed by using the item dictionary has a shortcomings that the item dictionary is to be always referred to confirm that the hierarchical structural relationship between the user preference items are defined in the item dictionary, the method is advantageous in an aspect that it needs the smallest storing space and an item is easily added or deleted.

Figure 5 is a table showing the hierarchical structure by using a lowermost user preference in accordance with the present invention.

The method as shown in the drawing is advantageous in that since upper items and relevant user preference values can be all extracted by using only the related information of the lowermost item in the hierarchical structure, the user preference value of the upper items can be calculated on a real time basis, and even if the user preference values of the upper items are not stored, there is no information loss. That is, this method does not require much memory.

As mentioned above, like the method for expressing the individual user preference information structure by using the coding scheme, the individual user preference information structure can be also expressed by using the coding scheme with the same effect.

Meanwhile, with reference to Figures 2 through 5, in the method for expressing the user preference information, the method for editing the user preference information after inputting information includes a user inputting type, an automatically updating type and a mixed type.

The user inputting type is a method that as the user uses certain information, a user preference/non-preference for the information used by the user is received through a dialog box, thereby updating a user preference.

The automatically updating type is a method that as the user uses certain information, a user preference is automatically updated in consideration of user preference items corresponding to the information used by the user in a predetermined standard.

The mixed type refers to a method mixing the user inputting type and the automatically updating type in which the information inputted by the user has a certain weight value, based on which a user preference is updated.

After the user preference/non-preference is edited through the above methods, in order to search information desired by the user, or recommend and provide information to the user, there are two methods: one method is that each user preference/non-preference is directly compared by user preference items to use, and the other method is that a standardized user preference/non-preference is used.

In order to automatically edit the user preference/non-preference on the basis of the information use record of the user, there is a method that items from the uppermost one to the lowermost one are all increased according to the classified item of each usage information.

Figure 6 is a table showing an existing preference expression method.

As shown in Figure 6, the existing preference expression structure has such a form that each item has preference/non-preference with a specific identifier.

With the existing method, relation among items cannot be expressed and preference information of every item must be maintained in any case.

In addition, when preference information is updated, each corresponding item



must be expressed in usage information.

Namely, if there is no information classified as 'entertainment', 'music' in the classification of the used information and there is only a name of a singer 'C' and a genre of 'new age', in the existing method, only the items 'C' and the 'new age' are updated and it is not possible to update preference of relevant upper items such as 'entertainment', 'music', 'popular music', 'person', 'woman singer'.

Meanwhile, in case that the individual user preference information is edited in the user preference item dictionary, for example, the user preference related to the upper items, such as 'entertainment', 'music', 'pop music', 'person', 'woman singer' to which the items such as a woman singer 'C' and 'new age' belong, can be also updated together by using only the user preference item information of the woman singer 'C' and 'new age'.

Figure 7 shows a hierarchical structure of preference items.

An entertainment item is classified into items of music, movie, drama, a game show, a talk show, sports, a variety show and a concert.

The music item is classified into items of classic and pop music.

The movie item can be classified into items of an action, an adventure, a comedy, a horror, a documentary, a drama, a scientific fiction, children.

The pop music can be classified into items of rock music, ballad, heavy metal, dance music, new age, rhythm & blues, jazz, trot, country western, or the like.

Such information can be expressed and stored as an item dictionary as shown in Figure 9.

Each user preference information is expressed by a set of individual user preference information having user preference/non-preference value by items and expressed by a description indicating an adaptive condition of each individual user

preference information, for the whole or partial item dictionary. In this manner, the hierarchical structure of the plurality of user preference items is constructed, edited and managed.

Figure 8 shows an example of the multiple structures with respect to preference items.

A user can have several individual preference information structures according to an environment of a system that the user uses or other conditions.

Figure 8a shows a case of having several individual preference information structures, which, for example, are used in order to manage several individual preference information structures such as preference at home or preference at work and include several structures from the uppermost item 'R' to lower items.

In this case, each individual preference information can be discriminated and managed by using description.

Figure 8b shows a case of having lower smaller hierarchical structures in the overall hierarchical structure. In this case, for example, the entire structure can be divided into several sub-structures, which are then designated and managed as an individual preference information structure in a device providing only movies or in a device providing only music.

Each item 1-1, 1-2, and 1-3, namely, lower items of the uppermost item 'R', can be managed.

Figure 9 is an example of the preference item dictionary.

In case of managing many preference items, a hierarchical structure of each item can be constructed and managed, and an item dictionary can include a user preference item identifier, a user preference item, a level and an upper item identifier.

The user preference item identifier identifies each user preference item, and the

user preference item indicates a content of the information to be provided to the user.

The level indicates the position of each user preference item leveled down from the upper position in the hierarchical structure. The uppermost level is '0'.

The upper item identifier indicates which one of an upper user preference item each user preference item belongs to. In a tree structure, the upper item identifier has an upper user preference item to which itself belongs.

The item dictionary is produced and managed by an information provider, and may exist in a storing unit of the user.

In case that the storing unit of the user includes the item dictionary, the item dictionary existing in the storing unit of the user must have the same content as that of the information provider. If the content of the item dictionary of the information provider is changed, the item dictionary of the user should be changed accordingly.

For example, in case that the user 'A' prefers a piece of music 'B' of a woman singer 'C', preference information of the user 'A' related to 'C' can be constructed as shown in Figures 2 through 5.

Figure 10 shows a case that a classification item of certain information is changed.

For example, when the piece 'A' was registered in the user preference information, since there was no music genre of 'new age' (that is, an item), the piece 'A' was classified by 'music>pop-music>ballade.

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However, as a pop music of 'new age' appears and comes on the stage as a new music genre in the music circle, when the piece 'A' is separated from the 'ballad' to be classified into the 'new age', the user preference can be automatically updated on the user's information use record.

In detail, when the piece 'A' is first classified, the user reduces the user

preference value for the piece 'A' in proportion to the number of use in the item of 'music>pop music>ballad' and increases the user preference value as much in the item of 'music>pop music>new age' as newly classified.

In the same way, when pieces of music of which classification has been changed are processed, there may be created a user preference on the item of 'music>pop music>new age' newly registered on the basis of the information use record without user's recognition. In this case, the information use record should include the number of use of the information or information making it possible to compute the number of use.

Figures 11a and 11b show a case where the classification for the items registered in the item dictionary is changed, of which Figure 11a is a table showing an item dictionary before it is changed in accordance with the present invention; and Figure 11b is a table showing an item dictionary before it is changed in accordance with the present invention.

The lower items belonging to the items of pop music and classic music are automatically changed from the lower items of 'entertainment>music>pop music' and 'entertainment>music>classic' to the lower items of 'art>auditory art>pop music' and 'art>auditory art>classic'.

The item dictionary changing method may need additional arithmetic operation. For example, in case that each item includes all of the item identifiers of the upper stage, the item identifiers can be changed.

As stated above, in case that the classification of the user preference items is changed, the user preference corresponding to the entertainment item and the music item, that is, the upper items of the pop music item and the classic item in the preference information by users is reduced in proportion to the user preference generated due to the pop music item and the classic item while the user preference of the newly classified

items of the art and the auditory art is proportionally increased.

In the preference construction using the coding scheme in which a storing space is reduced, the upper three fields for indicating entertainment>music>classic, entertainment>music>pop music> can be changed to upper three fields for indicating art>acoustic art>classic and art>acoustic art>pop music, thereby simply reflecting the changed preference item structure.

When a user asks recommendation of new information or is connected to the information provider by using the user preference information and use record, information that the user can prefer can be recommended.

[Effect of the invention]

As so far described, according to the user preference information structure having a multiple hierarchical structure and a multi-media information providing method using the same, the hierarchical data structure that is able to provide the user preference for providing information desired by the user is provided depending on the environment, based on which various information can be provided.

The hierarchical data structure constructing the user preference makes it possible for the user to receive information fitting the situation in which he or she is put by using a proper individual user preference information, automatically or according to user's selection.

In addition, since the user preference items have the hierarchical structure, various levels of user preference items can be defined. And, in case that the upper user preference items rather than the lowermost user preference item are selected, a detailed information can be provided to users by using their lower level of user preference for the information belonging to the selected item classification. Also, the user preference of the upper level

of user preference items can be constructed by using the user preference of the low level of user preference items.

What is claimed is:

1. A user preference information structure for providing user's desired information according to a search item preference of a user in a multimedia environment including an information provider and an information user, comprising:

- (a) preference information with respect to a search item of the user;
- (b) the preference information has a multiple hierarchical structure for individual preference information of each user and each search item;
- (c) the preference information is preference item information expressing preference/non-preference of each user and each search item.

2. The structure of claim 1, wherein the individual preference information structure consists of a preference/non-preference item, information on preference/non-preference information with respect to the preference item, and a description with respect to 0 or one preference item, and includes a sub-tree at its lower position.

3. The structure of claim 1, wherein every item that can be used as multimedia information search conditions can be described in the preference item.

4. The structure of claim 2 or 3, wherein, in constructing the preference structure, each preference item has a hierarchical relation.

5. The structure of claim 4, wherein items having the hierarchical relation have a hierarchical tree structure (individual preference information structure).

6. The structure of claim 1, wherein one of individual preference information structures is selected according to a method such as user selection or automatic client system identification.

7. The structure of claim 1, wherein the preference information forms the hierarchical structure with an identifier of an upper item.

8. The structure of claim 1, wherein the preference information forms the hierarchical structure with an item identifier by a coding scheme.

9. The structure of claim 1, wherein the preference information forms the hierarchical structure with an item identifier by an item dictionary.

10. The structure of claim 8, wherein when the hierarchical structure is formed by the item identifier according to the coding scheme, only the lowermost preference, except for upper item preference, is stored and preference related to upper items is extracted only with the lowermost related information from the hierarchical structure.

11. In a multimedia information service method, in order to provide user's desired information according to a search item preference of a user in a multimedia environment including an information provider and an information user,

(a) preference information with respect to a search item of a user is individual preference information according to each user and each search item and having a multiple hierarchical structure, and



(b) preference item information expressing preference/non-preference according to each user and each search item is searched in order to provide, recommend or limit information.

12. The method of claim 11, wherein non-used/newly acquired information is notified according to the individual signal information structure selected from the user preference/non-preference (namely, preference/non-preference by users) having the preference item structure, information expected for user preference is recommended or information expected for user's non-preference is limited.

13. In a method for processing user information structure, in order to provide user's desired information according to search item preference of a user in a multimedia environment including an information provider and an information user,

(a) preference information with respect to a search item of a user is individual preference information according to each user and each search item and having a multiple hierarchical structure, and

(b) when the hierarchical structure among the items is changed, a preference information structure is changed by using preference information structure of the user and use record data.

14. The method of claim 13, wherein the change in the hierarchical structure among items includes registration of a new item, deletion of an existing item or a change of a tree to which a sub-tree belongs.

15. The method of claim 13, wherein, as for the change of the preference

information structure, a corresponding preference item of the individual preference information structure of each user and preference/non-preference of upper items of the hierarchical structure can be changed by using the use record.

16. The method of claim 13, wherein the preference/non-preference of each item is processed by using a user interface.